

**Software Requirement Specification**

**For**

**Pharmacy Management & Medicine Checker**

**Version 1.0**

**Team Name: Web Warriors**

**Team Members**

- Fady Emad (Team Leader) – Email: [fadyemad2016@gmail.com](mailto:fadyemad2016@gmail.com)
- Ganna Islam
- Zeinab Ahmed
- Mariam Gamal
- Mohraeel John
- Mohamed Yasser
- Pola Samy
- Mina Montaser

**Submitted to:**

**Dr. Wesam Ahmed**

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## 1. Development Model

### Chosen Model: Incremental Development Model

#### Explanation (Why Incremental is chosen)

The Pharmacy Management System will be built using the **Incremental Development Model**, where every set of features will be delivered in fully working increments.

We chose incremental because:

1. **The project includes many core modules** (Inventory, Sales, Customer Management, Employee Management, Reporting). Incremental development allows building and delivering each module in a structured sequence.
2. **Earlier increments help us test and validate the system step-by-step**, reducing errors in later stages.
3. **Project timeline requires visible progress**. Incremental delivery guarantees that every week a new functional part is completed.
4. **Risk is minimized** because each increment is fully tested before moving to the next.
5. **The system structure is modular**, and each module works independently (e.g., you don't need the reports module to finish the sales module).
6. **Easy for a student project** to demonstrate progress to the doctor and submit parts on time.

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## 2. Full Story of the Project Features

### 1. Inventory Management

The pharmacist adds all medicines to the system with complete details including name, category, barcode, type, expiration date, quantity, price, supplier, and storage location.

The system tracks the quantity of each medicine automatically after every sale.

When a medicine reaches the minimum quantity, the system alerts the pharmacist.

Expired medicines are highlighted, and the system prevents selling an expired product.

### 2. Medicine Sales & Billing

The pharmacist scans or searches for a medicine and adds it to the invoice.

The system calculates the total price, adds discounts if applicable, and generates a digital invoice.

When the sale is completed, the system deducts the sold quantities from inventory.

The pharmacist can print the invoice or save it in the system for reporting.

### 3. Customer Public Search (NO account, NO login)

This is a **public module**.

Anyone can search for **medicines and check availability**.

The system displays basic medicine information (price, type, availability, prescription requirement).

No customer registration exists. No data stored.

### 4. Employee Management

Each employee has a role (Admin), username, password, and permissions.

Admins can add, edit, and remove employees.

The system monitors login history and activities.

### 5. Reporting & Analytics

The system generates reports including:

- Daily sales
  - Weekly sales
  - Monthly sales
  - Inventory status
  - Near-expiry medicines
  - Out-of-stock medicines
  - Top-selling medicines
  - Total income
- 

## 3. Functional Requirements (FR).

### 1. FR-01: Inventory Management

- **FR-01-01:** The system shall allow adding medicines with all required details.
- **FR-01-02:** The system shall update quantities after each sale.
- **FR-01-03:** The system shall display alerts for low stock.
- **FR-01-04:** The system shall prevent the sale of expired items.

### 2. FR-02: Sales and Billing.

- **FR-02-01:** The system shall allow searching for medicines.
- **FR-02-02:** The system shall allow adding medicines to an invoice.

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- **FR-02-03:** The system shall calculate the total price automatically with no discounts applied.
- **FR-02-04:** The system shall generate a final invoice with a unique invoice ID.
- **FR-02-05:** The system shall save all invoices in the database.
- **FR-02-06:** The system shall reduce inventory quantities automatically after confirming the sale.

### **3. FR-03: Customer Public Search (No Registration)**

- **FR-03-01:** Allow public users to search medicines by name or category.
- **FR-03-02:** Display availability, price, type, and prescription status.
- **FR-03-03:** No accounts, no registration, no saving customer data.

### **4. FR-04: Employee Management**

- **FR-04-01:** The system shall create and manage employee accounts.
- **FR-04-02:** The system shall enforce role-based permissions.
- **FR-04-03:** The system shall record login history.

### **5. FR-05: Reporting**

- **FR-05-01:** The system shall generate all sales reports.
- **FR-05-02:** The system shall generate inventory status reports.
- **FR-05-03:** The system shall generate expiry and low-stock reports.
- **FR-05-04:** The system shall generate supplier reports.
- **FR-05-05:** The system shall generate employee activity logs.

## **4. Non-Functional Requirements (NFR).**

### **1. NFR-01: Performance Requirements**

- The system shall load inventory data in less than **3 seconds**.
- The system shall support storing up to **10,000** medicine records.

### **2. NFR-02: Security Requirements**

- The system shall encrypt all stored passwords.
- The system shall implement strict role-based access control.

### **3. NFR-03: Usability Requirements**

- The system shall provide a clean, easy-to-use interface.
- New users shall be able to learn the system within **30 minutes**.
- The system shall support **English**.

### **4. NFR-04: Reliability Requirements**

- System uptime shall be at least **99%**.
- Data shall be auto-saved every **10 seconds**.
- The system shall recover from unexpected shutdowns automatically.

### **5. NFR-05: Data Storage Requirements**

- The system shall use a relational database.

### **6. NFR-06: Scalability**

- The system **will support** 50 concurrent users at launch and **will scale** to support 500 concurrent users using horizontal scaling.

### **7. NFR-07: Availability**

- The system **will maintain** monthly uptime  $\geq 99.9\%$ .

### **8. NFR-08: Localization**

- The system **will provide** English UI text, date formats, and default time zone set to Africa/Cairo.
- 

## **5. Full Requirements of Each Part of the Pharmacy Management System**

### **1. Inventory Management Module – Full Requirements**

#### **1.1 Medicine Information Management**

- The system shall allow adding a new medicine with the following mandatory fields:
  - Medicine Name
  - Barcode
  - Category
  - Type (Tablet/Syrup/Injection/etc.)
  - Manufacturer

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- Expiration Date
- Quantity in Stock
- Minimum Required Quantity
- Purchase Price
- Selling Price
- Supplier Name
- Storage Location (Shelf/Rack/Section)
- The system shall validate that all fields are filled before saving.
- The system shall ensure the expiration date is not in the past.
- The system shall prevent duplicate barcodes.

### **1.2 Stock Tracking**

- The system shall automatically decrease stock after every sales transaction.
- The system shall show real-time stock levels for each medicine.
- The system shall generate a “Low Stock Alert” when quantity drops below the minimum.
- The system shall block sales of medicines that have zero stock.

### **1.3 Expiration Management**

- The system shall highlight medicines that are expired.
- The system shall prevent the sale of expired medicines.
- The system shall display a list of medicines that will expire within 30 days.

### **1.4 Supplier Link**

- The system shall link each medicine to its supplier.
- The system shall show full supplier details whenever the pharmacist clicks the supplier’s name.

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## **2. Sales & Billing Module – Full Requirements**

### **2.1 Medicine Search**

- Search by name.
- Show available quantity.

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- Prevent adding out-of-stock items.

### 2.2 Invoice Creation

- 1- Add multiple items.
- 2- Automatic total calculation (NO discounts).
- 3- Calculate tax (if used).
- 4- Generate unique invoice ID.

### 2.3 Record:

- Date & time
- Items
- Total amount
- Employee who created the invoice

### 2.4 Completing the Sale:

- Confirm sale.
- Deduct stock.
- Save invoice.

---

## 3. Customer Management Module – Full Requirements

### 3.1 Customer Medicine Search Screen

This module is public (no login required).

The system shall allow customers to:

- Search medicines by name or category.
- View medicine:
  - Availability (In stock / Out of stock)
  - Price
  - Type
  - Basic details
- View if the medicine requires a prescription.

## **4. Employee Management Module – Full Requirements**

### **4.1 Employee Accounts**

- The system shall allow creating employees with:
  - Full Name
  - Username
  - Password
- The system shall enforce a secure password policy.

### **4.2 Role-Based Access Control**

- Admin shall have full access to all system modules.
  - The system shall restrict unauthorized actions automatically.
- 

## **5. Reporting Module – Full Requirements**

### **5.1 Sales Reports**

- The system shall generate:
  - Daily sales
  - Weekly sales
  - Monthly sales
  - Annual sales
- Each report shall include:
  - Total number of invoices
  - Total income
  - Number of items sold

## 6. Non-Functional Requirements – Constraints, Limitations, External & Organizational Requirements

Non-functional requirements define the **quality attributes, constraints, and operational conditions** under which the Pharmacy Management System must operate. These requirements ensure the system is reliable, secure, usable, and compliant with organizational and external rules.

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### 6.1 System Constraints

- The system shall be developed as a **web-based website** accessible through standard web browsers (such as Google Chrome, Microsoft Edge, and Mozilla Firefox) without requiring any software installation on client devices.
  - The system shall use a **Relational Database Management System (RDBMS)** to ensure structured data storage, consistency, and integrity.
  - The system shall operate on **standard desktop computers** commonly used in pharmacies without requiring specialized hardware.
  - The system shall support only **modern web browsers** that comply with current web standards.
  - The system shall require a stable local or internet network connection to function correctly.
- 

### 6.2 Technical Limitations

- The system shall not support **online or electronic payment processing**; all payments are handled externally.
  - The system shall not store or manage **customer personal information**, as customers do not register or log in.
  - The system shall not support **returns, refunds, or discount management**.
  - The system shall not integrate with **external insurance, banking, or governmental systems**.
  - The system shall not include mobile application functionality.
-

### 6.3 External Requirements

- The system shall comply with **local pharmacy regulations** related to medicine storage, tracking, and expiration management.
  - The system shall clearly label medicines that **require a prescription** to ensure legal compliance.
  - The system shall comply with **basic data protection principles**, including secure handling of employee credentials and system data.
  - The system shall follow general **software quality and documentation standards** required by academic institutions.
- 

### 6.4 Organizational Requirements

- Access to internal system modules shall be restricted to **authorized pharmacy employees only**.
  - Each employee shall be assigned a **unique system account** based on their role.
  - The pharmacy administration shall define and enforce **system usage policies**.
  - All critical employee actions shall be logged for monitoring and accountability.
-

## 7. Metrics for Non-Functional Requirements (Measurable & Verifiable)

To ensure that non-functional requirements are **testable, measurable, and verifiable**, the following metrics will be applied:

Non-Functional Requirement	Metric	Acceptance Criteria
Performance	Page load time	Inventory page loads ≤ 3 seconds
Scalability	Data capacity	At least 10,000 medicine records
Security	Password protection	Passwords stored using secure hashing
Availability	System uptime	≥ 99.9% monthly uptime
Reliability	Recovery capability	Automatic recovery after system failure
Usability	Learning time	New user can operate system within 30 minutes
Localization	Language support	Full English support
Concurrency	Active users	Support ≥ 50 concurrent users

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## 8. Primary Use Cases of the System

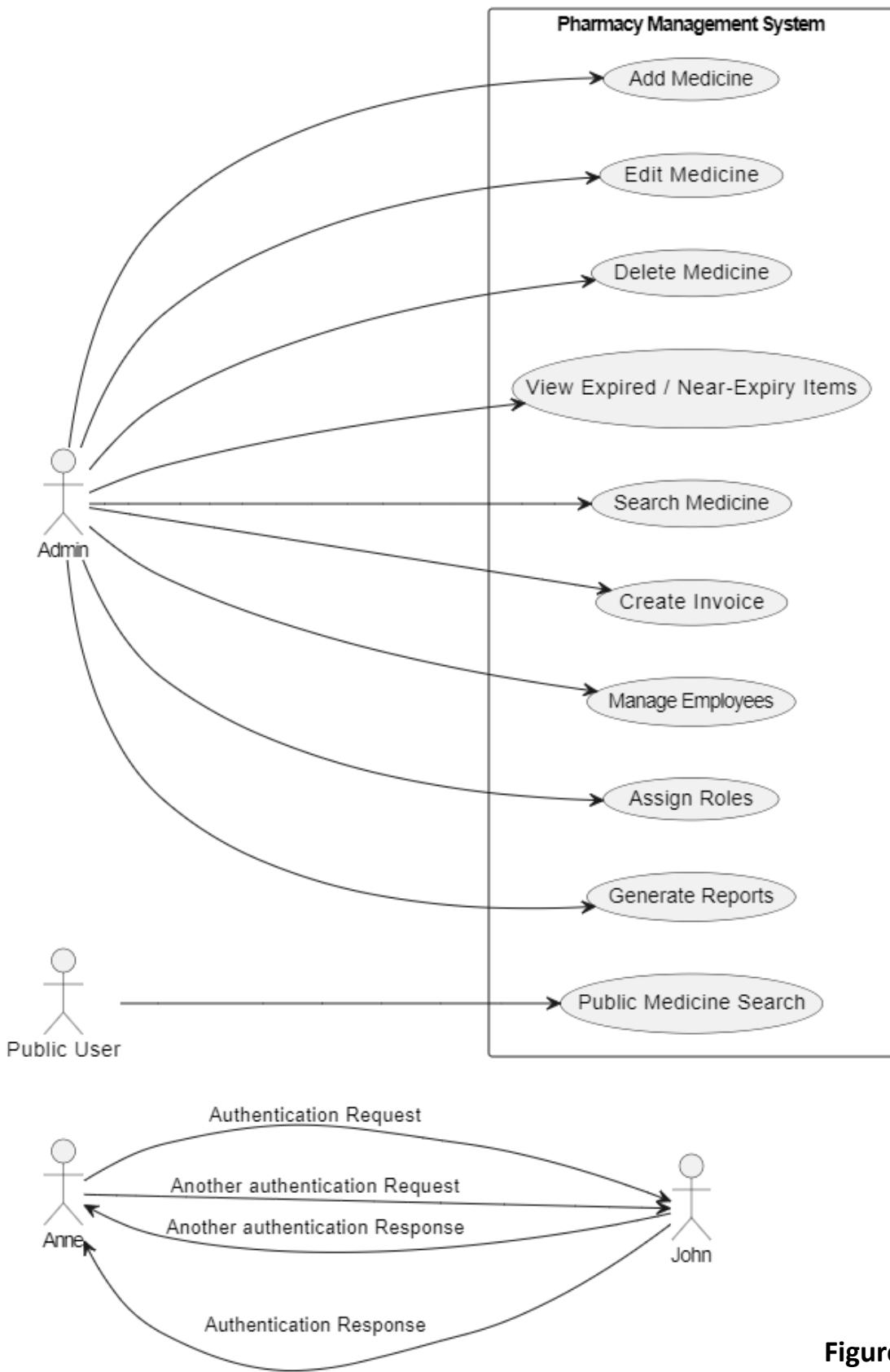
### Actors

- Admin
- Customer (Public User)

### Primary Use Cases

1. Admin logs into the system
2. Admin adds new medicine information
3. Admin updates medicine details
4. Admin performs medicine sales
5. Admin generates and prints invoices
6. Admin views inventory status
7. Admin generates system reports
8. Customer searches for medicines
9. Customer views medicine availability, price, and prescription requirement

**(SRS Doc of Pharmacy Management System)**



**Figure 1**

## **9. Database Requirements**

### **Database Type**

- Relational Database Management System (RDBMS)

### **Database Design Requirements**

- The database shall enforce primary keys for all main entities.
- Foreign key constraints shall be used to ensure referential integrity between related tables.
- Unique constraints shall be applied where required (e.g., username, email, barcode, tag name).
- Check constraints shall be used to restrict valid values (e.g., roles, drug types, quantities).
- Cascade rules shall be applied appropriately for delete operations.
- Default values shall be used for timestamps and numeric fields where applicable.

### **Main Tables**

#### **1. Admins (System Users)**

**Stores administrative users such as super admins and cashiers.**

##### **Table: admin:**

admin\_id (Primary Key)

username (Unique)

email (Unique)

password\_hash

role (super\_admin, cashier)

created\_at

#### **2. Admin Logs**

**Tracks login and logout activities for admins.**

##### **Table: admin\_logs**

log\_id (Primary Key)

admin\_id (Foreign Key → admins.admin\_id)

action\_type (login, logout)

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action\_time

### Relationship

One admin can have many log records

Deleting an admin deletes related logs (CASCADE)

### 3. Drugs

**Stores detailed information about medicines available in the pharmacy.**

#### Table: drugs

drug\_id (Primary Key)

name

selling\_price

purchasing\_price

barcode (Unique, Nullable)

image\_url

description\_before\_use

description\_how\_to\_use

description\_side\_effects

requires\_prescription (Boolean)

drug\_type (tablet, syrup, injection, capsule, cream, gel, spray, drops)

manufacturer

expiration\_date

shelf\_amount

stored\_amount

low\_amount

sub\_amount\_quantity

created\_at

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### 4. Tags

Used to classify drugs (e.g., antibiotic, painkiller, vitamin).

#### Table: tags

tag\_id (Primary Key)

name (Unique)

### 5. Drug Tags (Many-to-Many Relationship)

Links drugs with multiple tags.

#### Table: drug\_tags

drug\_id (Foreign Key → drugs.drug\_id)

tag\_id (Foreign Key → tags.tag\_id)

Primary Key

Composite Key (drug\_id, tag\_id)

#### Relationship

A drug can have multiple tags

A tag can belong to multiple drugs

### 6. Invoices

Represents sales transactions created by admins.

#### Table: invoices

invoice\_id (Primary Key)

admin\_id (Foreign Key → admins.admin\_id)

invoice\_time

total\_amount

tax\_amount

discount\_amount

change\_amount

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### **Relationship**

One admin can create many invoices

If an admin is deleted, admin\_id is set to NULL

### **7. Invoice Items**

**Stores individual drug items sold in each invoice.**

#### **Table: invoice\_items**

item\_id (Primary Key)

invoice\_id (Foreign Key → invoices.invoice\_id)

drug\_id (Foreign Key → drugs.drug\_id)

quantity

### **Relationship**

One invoice can contain many items

Each item references one drug

Deleting an invoice deletes its items (CASCADE)

### **Entity Relationships Summary**

Admins → Admin Logs: One-to-Many

Admins → Invoices: One-to-Many

Invoices → Invoice Items: One-to-Many

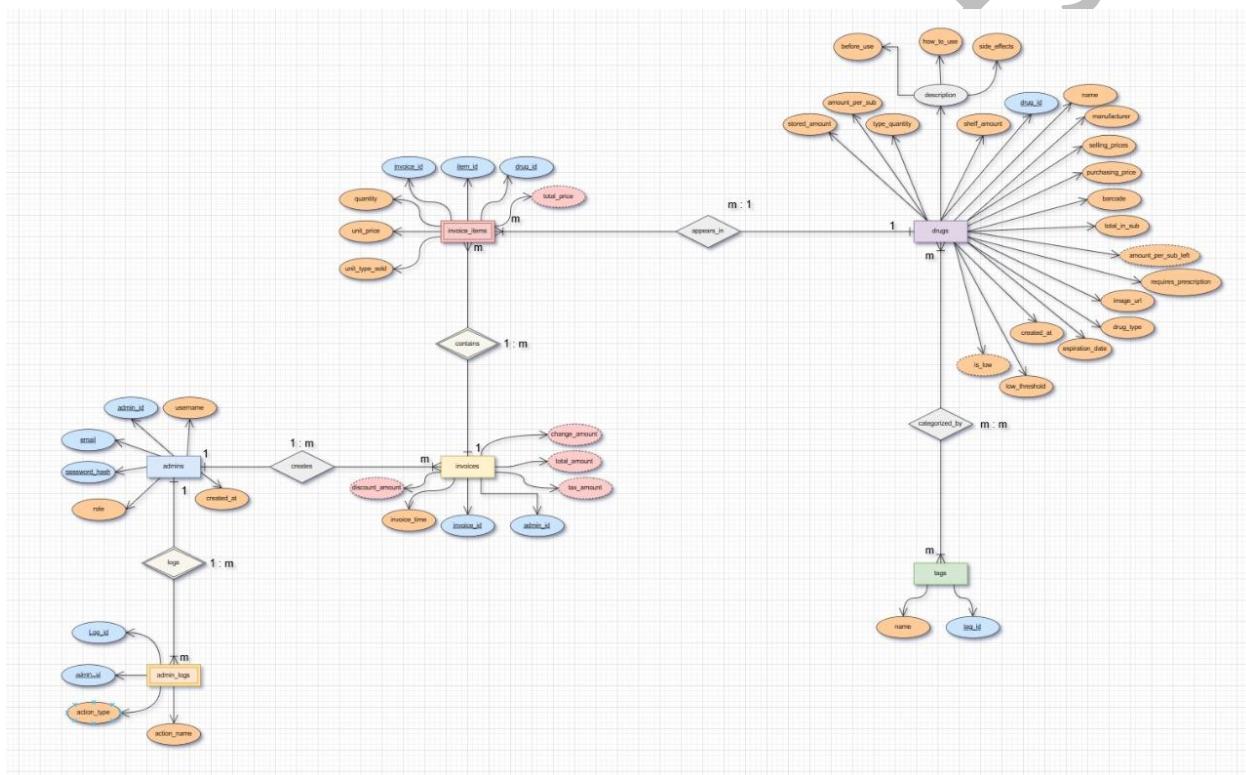
Drugs → Invoice Items: One-to-Many

Drugs ↔ Tags: Many-to-Many (via drug\_tags)

### **Business Rules Enforced by the Database**

- Drug quantities must be greater than zero.
- User roles and drug types are restricted using CHECK constraints.
- Barcodes, usernames, emails, and tag names must be unique.
- Automatic timestamps are recorded for auditing purposes.
- Inventory thresholds (low\_amount) support stock monitoring.

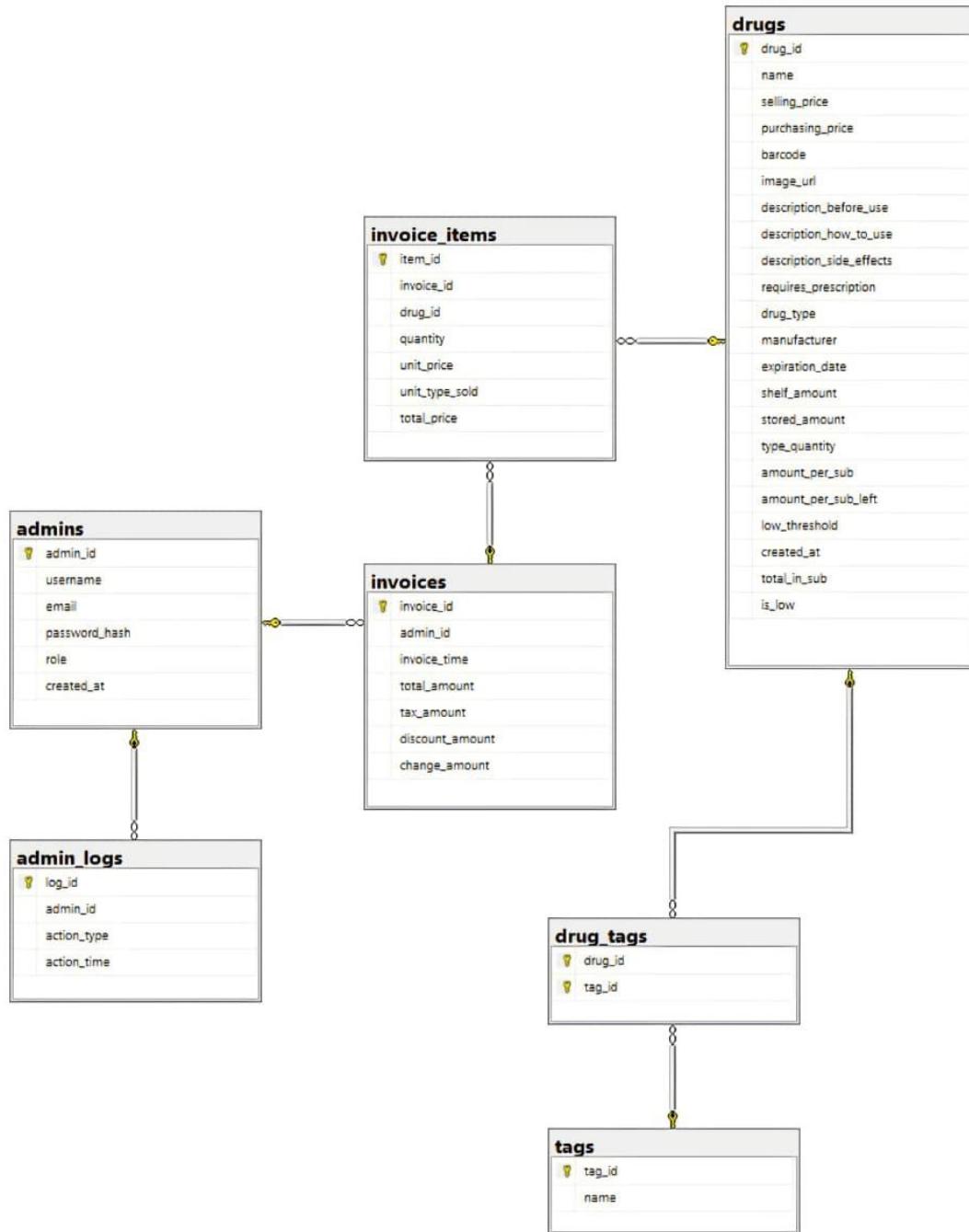
## Entity Relationship Diagram (ERD):



**Figure 2**

**(SRS Doc of Pharmacy Management System)**

**Class Diagram:**



**Figure 3**

## 10. Required UI Screens

The Pharmacy Management System is a web-based system that provides multiple user interface (UI) screens to support different users and system functionalities. Each screen is designed to be simple, secure, and easy to use while ensuring efficient pharmacy operations.

The system shall include the following user interface screens:

### 10.1 Login Screen (Employees Only)

**Purpose:**

Allows authorized pharmacy staff to securely access the internal system.

**Features:**

- Username input field
- Password input field (masked)
- Login button
- Error messages for invalid credentials
- Role-based redirection after login

**Users:**

Admin

---

### 10.2 Dashboard Screen

**Purpose:**

Provides an overview of system status and quick access to core modules.

**Features:**

- Summary cards showing:
  - Total medicines
  - Low-stock medicines
  - Near-expiry medicines
  - Daily sales summary
- Navigation menu to all system modules

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- Alerts and notifications

### Users:

Admin

---

## 10.3 Inventory Management Screen

### Purpose:

Allows staff to view and manage all medicines in the pharmacy.

### Features:

- List of all medicines in a table format
- Search and filter by name, category, or expiration date
- Stock level indicators (Normal / Low / Out of stock)
- Buttons to add, edit, or view medicine details

### Users:

Admin

---

## 10.4 Add / Edit Medicine Screen

### Purpose:

Used to add new medicines or update existing medicine information.

### Features:

- Input fields for:
  - Medicine name
  - Barcode
  - Category
  - Type
  - Manufacturer
  - Expiration date
  - Quantity

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- Prices
- Supplier
- Storage location
- Input validation and required field checks
- Save and cancel buttons

### Users:

Admin

---

## 10.5 Sales & Billing Screen

### Purpose:

Handles medicine sales and invoice creation.

### Features:

- Medicine search bar
- Medicine selection list with available quantity
- Invoice item table (medicine, quantity, price)
- Automatic total calculation (no discounts)
- Confirm sale button

### Users:

Admin

---

## 10.6 Invoice Preview & Print Screen

### Purpose:

Displays the final invoice before printing or saving.

### Features:

- Invoice ID
- Date and time
- List of purchased medicines

## (SRS Doc of Pharmacy Management System)

- Total amount
- Print and save options

### Users:

Admin

---

## 10.7 Public Medicine Search Screen (No Login Required)

### Purpose:

Allows customers to check medicine availability without creating an account.

### Features:

- Search by medicine name or category
- Display:
  - Medicine name
  - Price
  - Availability status
  - Type
  - Prescription requirement
- No data collection or user tracking

### Users:

Public customers

---

## 10.8 Session Timeout & Logout Screen

### Purpose:

Ensures system security after inactivity.

### Features:

- Automatic logout message
- Redirect to login screen

### Users:

Admin

---

## Real Screens For the Admin Part:



Figure 4

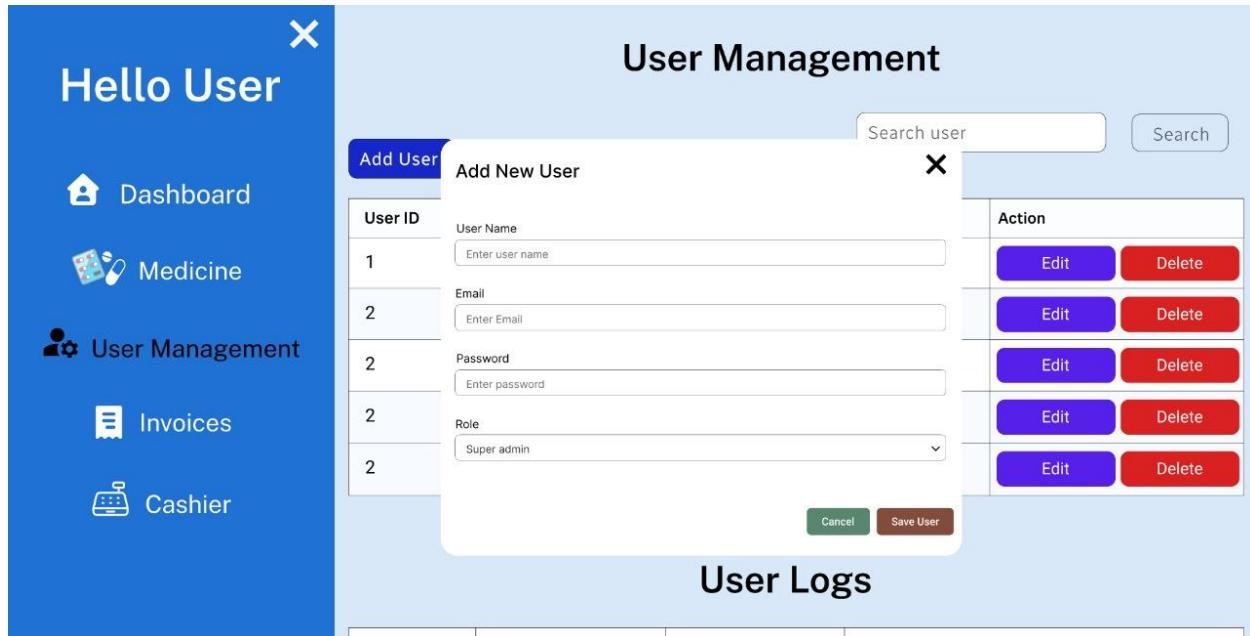
The image shows the dashboard screen for the Pharmacymarts Admin Part. On the left, a sidebar titled "Hello User" lists navigation options: Dashboard, Medicine, User Management, Invoices, and Cashier, each with an icon. At the bottom is a "Log out" button. The main area is titled "Invoices" and displays a table of invoice items. The table has columns for ID, Item Name, Quantity, Unit price, and Total. The data is as follows:

ID	Item Name	Quantity	Unit price	Total
1	Mark	2	\$ 28.99	\$ 56.99
2	John	1	\$ 28.99	\$ 56.99
3	William	5	\$ 28.99	\$ 56.99
4	Tony	3	\$ 28.99	\$ 56.99

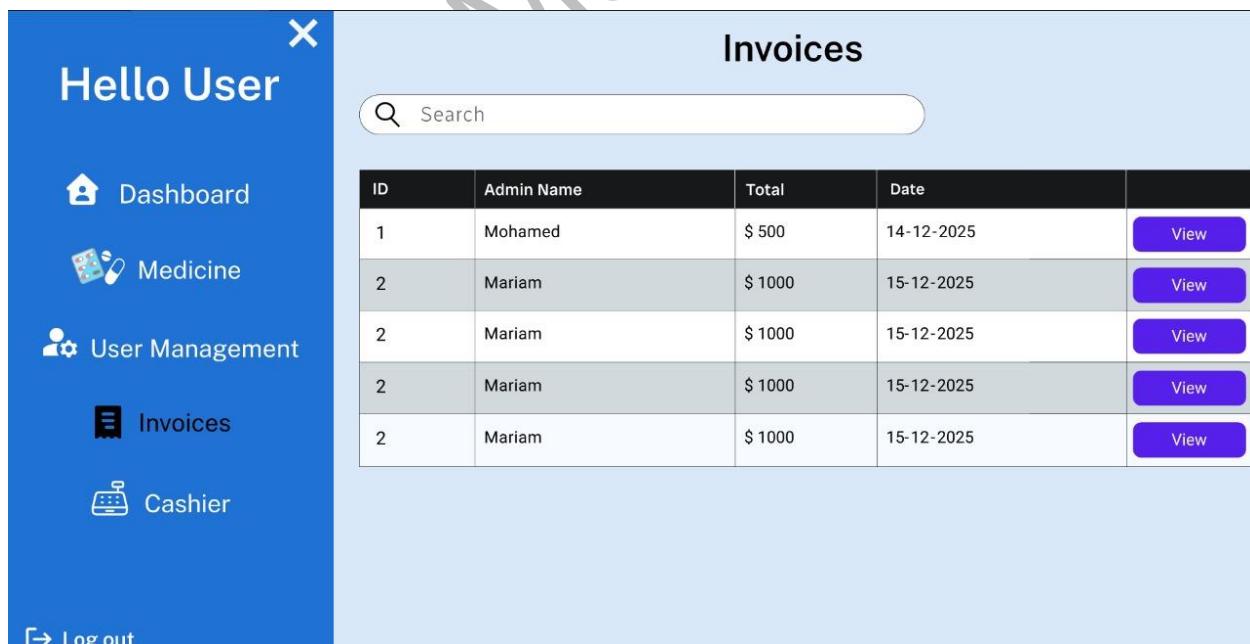
Total \$ 399.99

Figure 5

**(SRS Doc of Pharmacy Management System)**



**Figure 6**



**Figure 7**

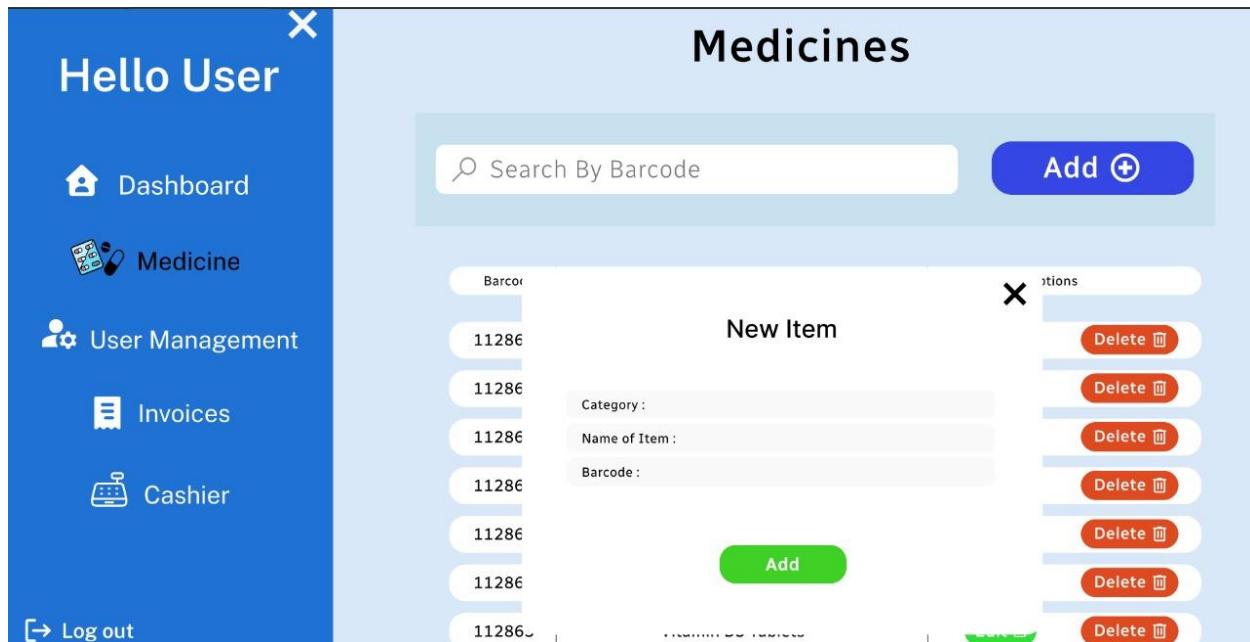


Figure 8

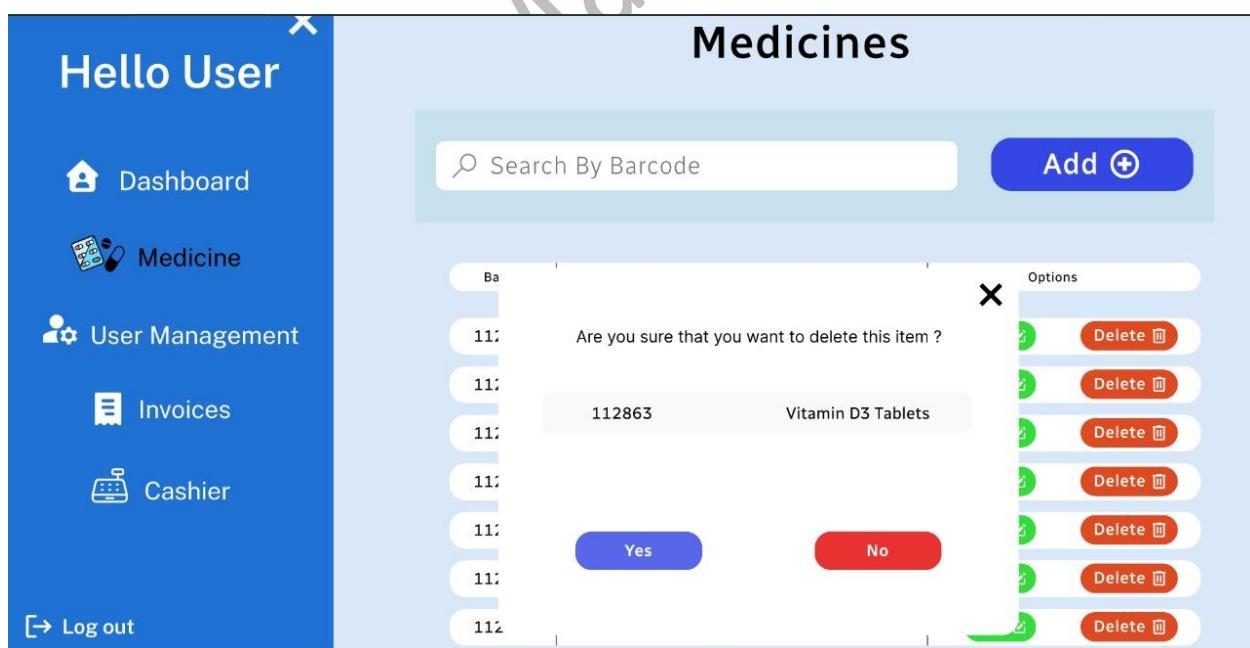
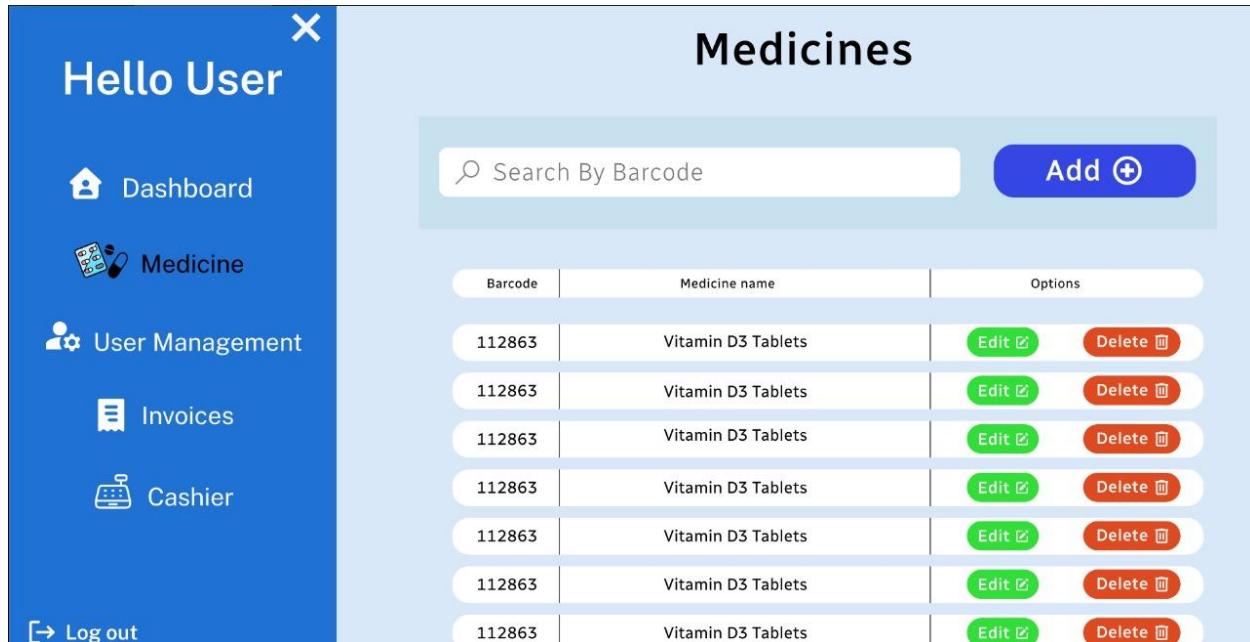
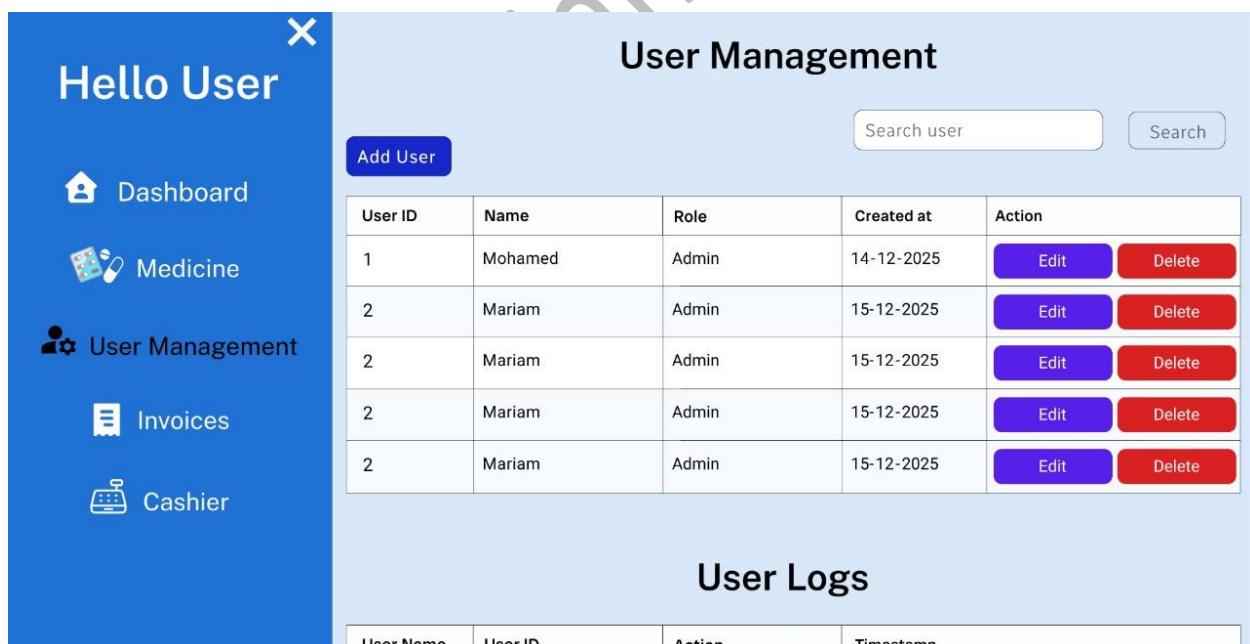


Figure 9

**(SRS Doc of Pharmacy Management System)**



**Figure 10**



**Figure 11**

### (SRS Doc of Pharmacy Management System)

The screenshot shows a user management interface. On the left, there's a sidebar with icons for Invoices and Cashier, and a Log out button. The main area has two tables. The top table is titled "User Management" and lists three users: Mariam (User ID 2) with Admin privileges, timestamped 15-12-2025. The bottom table is titled "User Logs" and shows Mariam logging in at 14-12-2025 00:00, logging out at 15-12-2025 00:00, and then logging back in at 15-12-2025 00:00.

User ID	User Name	Role	Timestamp	Edit	Delete
2	Mariam	Admin	15-12-2025	Edit	Delete
2	Mariam	Admin	15-12-2025	Edit	Delete
2	Mariam	Admin	15-12-2025	Edit	Delete

User Logs			
User Name	User ID	Action	Timestamp
Mohamed	1	Login	14-12-2025 00:00
Mariam	2	Logout	15-12-2025 00:00
Mariam	2	Logout	15-12-2025 00:00
Mariam	2	Login	15-12-2025 00:00
Mariam	2	Logout	15-12-2025 00:00

Figure 12

### Real Screens for the Customer Part:

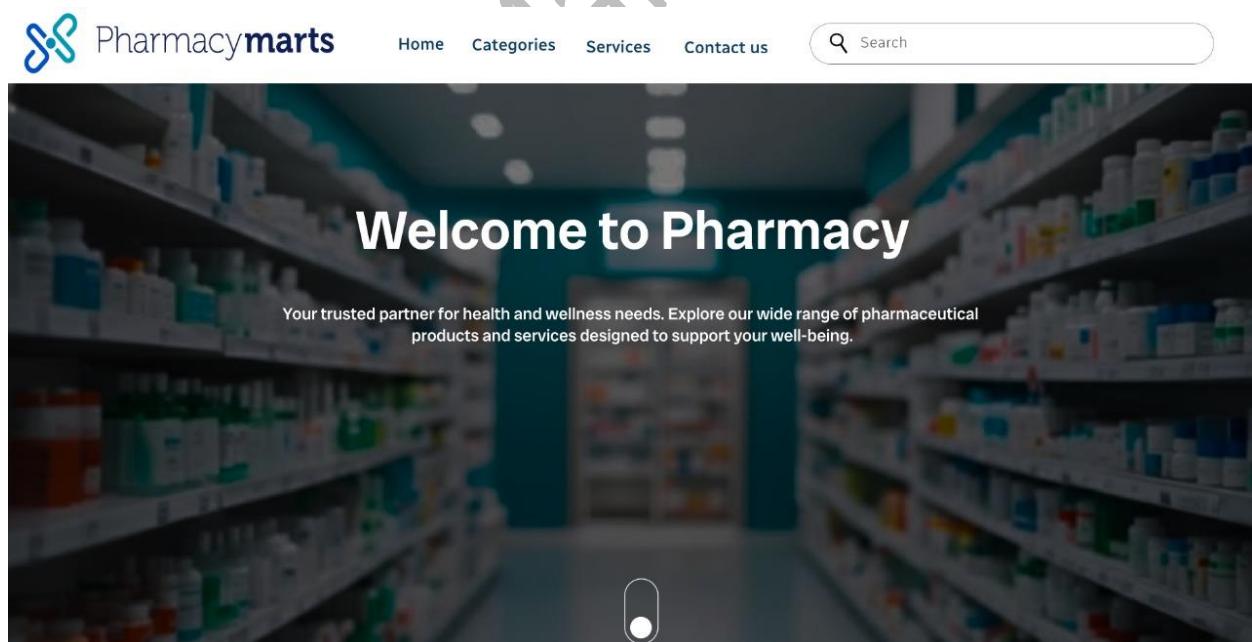


Figure 13

## (SRS Doc of Pharmacy Management System)

The screenshot shows the 'Categories' section of the Pharmacymarts website. At the top, there is a navigation bar with links for Home, Categories, Services, and Contact us, along with a search bar. Below the navigation is a banner image of a medicine cabinet. The main content area features three categories: 'Drugs', 'Products', and 'Baby Care', each with an icon, a brief description, and a 'View items' button.

## Categories

**Drugs**  
Medicine for common health conditions and daily care.  
[View items →](#)

**Products**  
Daily necessities for personal care and wellness support.  
[View items →](#)

**Baby Care**  
Essential solutions for babies' health, comfort, and hygiene.  
[View items →](#)

Figure 14

The screenshot shows the 'Services' section of the Pharmacymarts website. At the top, there is a navigation bar with links for Home, Categories, Services, and Contact us, along with a search bar. Below the navigation is a banner image of a doctor taking a patient's blood pressure. The main content area features a section titled 'Blood Pressure' with a description of what it is and how it is measured.

## Services

**Blood Pressure**

Blood pressure (BP) is the pressure of circulating blood against the walls of blood vessels. Blood pressure needs is from the heart, pumping blood through the circulatory system. When used without qualification, the term "Blood pressure" refers to the pressure in the large arteries.

Figure 15

The screenshot shows a website for "Pharmacymarts". At the top, there is a navigation bar with links for Home, Categories, Services, and Contact us. A search bar is also present. Below the navigation, there is a photograph of a baby's feet standing on a white digital scale. To the left of the image, the heading "Weight measurement" is displayed, followed by a descriptive text: "There is a weight and height measuring device in all CARE pharmacies with some analyzes of your body that will help you understand your needs."

Figure 16

The screenshot shows a website for "Pharmacymarts". At the top, there is a navigation bar with links for Home, Categories, Services, and Contact us. A search bar is also present. Below the navigation, there is a photograph of a hand holding a blue blood glucose meter. The device's screen displays the message "LOW BLOOD SUGAR". To the right of the image, the heading "Blood Glucose" is displayed, followed by a descriptive text: "The blood glucose level is the amount of glucose in the blood. Glucose is a sugar that comes from the foods we eat, and it is also formed and stored inside the body. It is the main source of energy for the cells of our body, and it is carried to each cell through the bloodstream."

Figure 17

## (SRS Doc of Pharmacy Management System)

The screenshot shows the Pharmacymarts website. At the top, there is a navigation bar with links for Home, Categories, Services, and Contact us. A search bar is also present. Below the navigation, there is a photograph of a hand holding a blue medical device, possibly a blood glucose meter. To the right of the photo, a text box contains the following text:  
the cells of our body, and it is carried to each cell through the bloodstream.

### Contact Information

If you have any questions or need assistance, our pharmacy team is here to help. Find how to reach out to us through phone, email or visit one of our stores. We are committed to providing reliable support and answering your service-related questions and services.

Our contact details:

- 0123 000000
- Dr/Ali Donia El-Sherrawy, Corniche Al Azhar, Qesm Than Madinet Nasr, Cairo Governorate

A large watermark reading "Management" is overlaid across the middle of the page.

Figure 18

The screenshot shows the Pharmacymarts website. At the top, there is a navigation bar with links for Home, Categories, Services, and Contact us. A search bar is also present. Below the navigation, there is a photograph of a hand holding a blue medical device, possibly a blood glucose meter. To the right of the photo, a text box contains the following text:  
If you have any questions or need assistance, our pharmacy team is here to help. Find how to reach out to us through phone, email or visit one of our stores. We are committed to providing reliable support and answering your service-related questions and services.

Our contact details:

- 0123 000000
- Dr/Ali Donia El-Sherrawy, Corniche Al Azhar, Qesm Than Madinet Nasr, Cairo Governorate
- Sat-Thu 8 AM - 12 AM | Friday 2 PM - 12 AM
- pharmacy@example.com

A large watermark reading "Management" is overlaid across the middle of the page.

At the bottom of the page, there is a footer bar with the text "pharmacymarts.com | All rights reserved. 2025 A Digital Pharmacy Company". To the right of the footer, there are icons for Facebook, Twitter, LinkedIn, and a speech bubble.

Figure 19

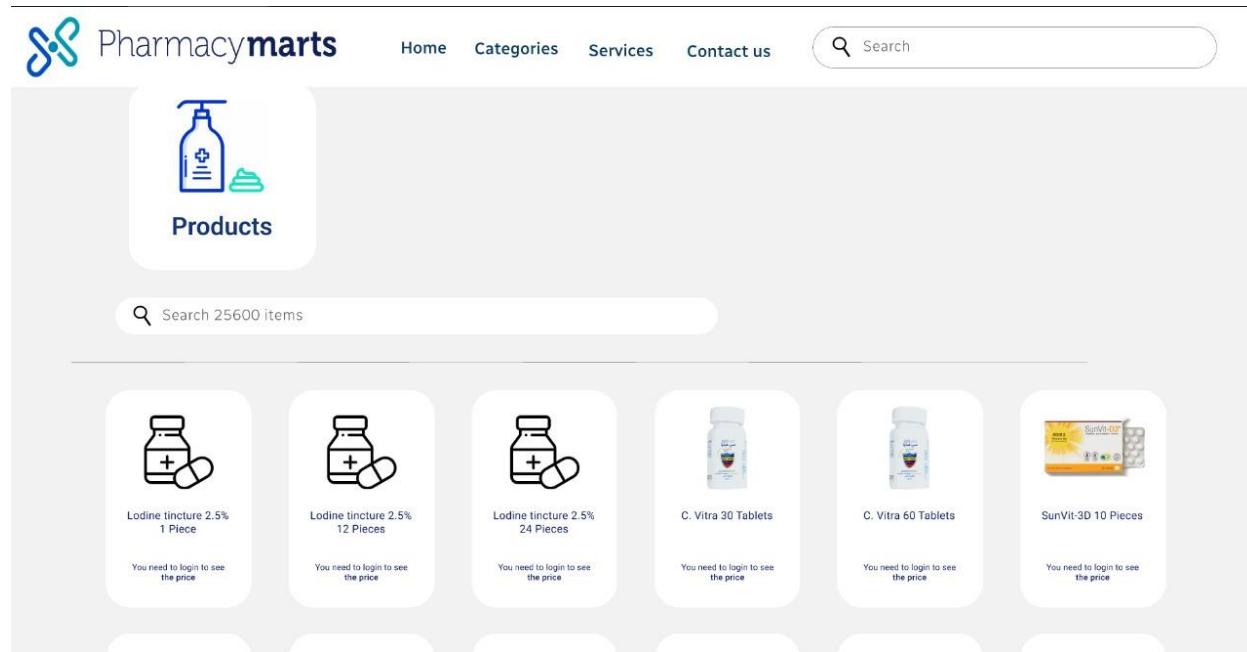


Figure 20

## 11. High-Impact Risks Related to Development

This section identifies the most significant risks that may affect the development, deployment, and operation of the Pharmacy Management System, along with mitigation strategies to reduce their impact.

### 11.1 Technical Risks

**Risk:** Data loss due to system failure, hardware malfunction, or unexpected shutdowns.

**Impact:**

Loss of inventory data, sales records, or employee activity logs could disrupt pharmacy operations and affect data accuracy.

**Mitigation:**

- Implement automatic data saving after every critical operation.
- Perform regular database backups on a scheduled basis.
- Use transaction management to ensure data consistency during failures.

## **11.2 Security Risks**

**Risk:** Unauthorized access to the system by non-authorized users.

**Impact:**

Unauthorized users could modify inventory, access sensitive employee data, or manipulate sales records.

**Mitigation:**

- Enforce role-based access control for all system modules.
  - Encrypt all stored passwords using secure hashing techniques.
  - Automatically log and monitor all employee activities.
- 

## **11.3 Time and Schedule Risks**

**Risk:** Limited time available for development and testing.

**Impact:**

Incomplete implementation, reduced testing coverage, or delayed project submission.

**Mitigation:**

- Use incremental development to deliver features in small, manageable phases.
  - Define clear milestones and deadlines for each increment.
  - Prioritize core system functionality before optional features.
- 

## **11.4 Data Accuracy Risks**

**Risk:** Incorrect or inconsistent inventory data due to human error or system issues.

**Impact:**

Incorrect stock levels may lead to selling unavailable medicines or failing to detect low-stock and expired items.

**Mitigation:**

- Automatically update inventory quantities after each sale or supply entry.
- Validate all data inputs before saving.
- Prevent manual modification of calculated fields.

## 11.5 User Error Risks

**Risk:** Incorrect data entry by pharmacy employees.

**Impact:**

Incorrect medicine information, wrong pricing, or inaccurate reports.

**Mitigation:**

- Implement input validation and mandatory fields.
  - Display confirmation dialogs before critical actions.
  - Provide clear error messages and system feedback.
- 

## 11.6 Performance Risks

**Risk:** System slowdown during peak usage times.

**Impact:**

Delayed sales processing and reduced user satisfaction.

**Mitigation:**

- Optimize database queries and indexing.
  - Monitor system performance regularly.
  - Limit unnecessary background operations.
- 

**Thank you so much for your interesting and  
attention.**